

DOCUMENT RESUME

ED 240 607

CS 208 179

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TITLE Newspaper Uses of Satellite Technology.
INSTITUTION Freedom of Information Center, Columbia, Mo.
REPORT NO FOI-487
PUB DATE Jan 84
NOTE 9p.
AVAILABLE FROM Freedom of Information Center, Box 858, Columbia, Missouri 65205 (\$1.00; quantity discounts available).
PUB TYPE Information Analyses (070)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Communications Satellites; Facsimile Transmission; Mass Media; *Newspapers; News Reporting; *Technological Advancement; *Telecommunications; Teleconferencing
IDENTIFIERS Associated Press; Federal Communications Commission; New York Times; United Press International; USA Today; Wall Street Journal

ABSTRACT

Replacing slower mail service, satellite transmission now gives the newspaper industry a practical and almost spontaneous method for sending all kinds of information to any newspaper across the country. Unlike other communication industries, newspapers did not begin to make widespread use of satellite technology until 1979, when government regulation requiring expensive licensure for receive-only satellite dishes was lifted. "The Wall Street Journal," "The New York Times," and "USA Today" are three major newspapers employing satellite technology, the latter being a "national daily" newspaper--a format virtually impossible without satellite transmission. The two major news wire services, The Associated Press and United Press International, have moved rapidly to install receiving stations since deregulation of receive-only dishes, thus allowing them independence from and considerable savings over transmission through telephone facilities. This technology has also made possible the concept of transmitting newspapers into subscribers' homes through television. More efficient communication within franchise businesses and "videoconferencing" are also possibilities. The most significant advantages of using satellites for news gathering will be realized if technology continues to make satellite communications more portable and less expensive, although clarity of reception is no longer guaranteed since frequency coordination of signals is no longer under regulation. (HTH)

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NEWSPAPER USES OF SATELLITE TECHNOLOGY

FREEDOM OF INFORMATION CENTER REPORT NO. 487

This report was written by David Johns, a Master's candi-
date at the University of Missouri School of Journalism.

For generations, newspapers have been hampered by a communications system that has restricted the flow of information in American society. Until recently, newspapers depended mainly on the mail service for sending and receiving news copy and photographs. The service meant that sometimes days or weeks passed before editors could receive stories and photographs and print them. Consequently, many stories not originating at the newspaper that planned to print them often had to be untimely syndicated features.

But now the days of delayed flow of news stories, photographs, graphics and syndicated material within the newspaper industry are gone. A new technology has arisen to help newspapers enter a new era in communications transmission. That technology is satellite transmission, which now gives the newspaper industry a practical and almost spontaneous method for sending all kinds of information to any newspaper throughout the country.

Through satellite transmission, in the last decade two national newspapers have been born, hundreds of earth dishes have sprung up on the roofs of wire service subscribers and electronic publishing has become a viable commercial undertaking.

FCC DEREGULATION

The newspaper industry was later than other businesses that depend heavily on telecommunications systems in reaping the benefits of satellite technology. The telephone and television industries began using satellites on a commercial basis for transoceanic transmissions in the mid-1960s. Cable TV programming has been transmitted via satellite since the mid-1970s. Newspapers, on the other hand, did not begin to make widespread use of satellite technology until 1979.

The main reasons for the delay in satellite use by newspapers were government regulation and the high cost of installing receive-only earth dishes. Before 1979, the Federal Communications Commission required licenses for the installation of receive-only as well as uplink earth stations. Applicants had to go through an expensive and time-consuming three-step process that included frequency coordination, filing for construction and filing for a license.

According to Donald H. Till, communications director for *The Washington Post*, the cost of complying with the FCC's licensing procedure ranged from \$1,200 to \$3,000 per site, almost as much as the cost of some small dish antennas.¹ But the FCC revoked the mandatory licensing requirement for the installation of receive-only earth dishes in October 1979.

Before 1979, the regulation of earth stations had raised certain First Amendment questions within the newspaper industry. The licensing of earth stations was viewed by some as an infringement on press freedom because the government was controlling a potentially important aspect of the news gathering and distribution processes. Proponents of press freedom generally argue that the press is constitutionally protected from governmental interference by the First Amendment.

The Satellite Task Force, a group formed in 1979 to look into the possibility of satellite use by newspapers, noted in its final report of 1980 that concerns over "achieving a regulatory climate consistent with First Amendment guarantees of a free press unlicensed by government...virtually disappeared with the FCC decision."²

FACSIMILE TRANSMISSION

The ability to duplicate photographs, maps, text and other printed material in distant locations has been possible for decades. The transmission of facsimile signals via satellite, however, is a recent phenomenon. The process sends newspapers exact duplicates of printed, drawn, written or photographed material. The duplicate, which is black and white or color, can be sent via satellite or through terrestrial micro-

Summary:



The wave of newspaper publishing by satellite transmission has had a tremendous impact on the newspaper industry. In the last decade, satellite technology has enabled the creation of two national newspapers, making electronic publishing a viable commercial undertaking.

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wave systems or telephone lines.

Dow Jones & Co. pioneered the concept of facsimile transmission of newspapers via satellite in the 1970s. In 1962, *The Wall Street Journal* experimented with facsimile transmission through microwave channels between Palo Alto, Calif., and Riverside, Calif. Twenty-two relay stations conveyed the facsimile signals across the state. The *Journal* later used the microwave system on a commercial basis.³

The terrestrial operation used by the *Journal* before 1975 had several disadvantages over the satellite system now in service. In the former operation, news was wired from the *Journal*'s central office in New York City to Chicopee, Mass., where it was retransmitted through telephone lines to composing rooms across the United States. Even though the news content was the same throughout the country, the newspaper's appearance differed in each of the seven distribution regions. The layout and editing process required 25 people in each of the *Journal*'s seven composing rooms. Distribution of the newspaper by plane, truck and through the U.S. Postal Service was slow and cumbersome by today's standards, and many subscribers got it a day late.⁴

The efficiency and quality of the *Journal*'s national operation improved greatly after Dow Jones & Co. went to satellite in 1975. The ability to send facsimile signals from regional composing rooms to printing plants across the country made it possible for the *Journal* to publish a uniform newspaper. A subscriber to Seattle now gets the same issue, except for advertising, as a reader in Miami. The average printing plant now requires only about 20 employees.⁵ Between 95 and 98 percent of the *Journal*'s subscribers now get the newspaper on the same day it is printed. Nationwide circulation has risen to almost 2 million⁶—the largest among daily newspapers in the United States.⁷

After the experimental facsimile satellite transmission between Chicopee and South Brunswick, N.J., succeeded in 1975, Dow Jones & Co. set up a network of two-way earth stations across the nation. Satellite technology now provides a vital link in the production of the *Journal*, which has eliminated much of its previously used terrestrial operation. The new technology has made possible the publication of five regional editions that are identical except for advertising. Editorial content and layout are the same, but advertising varies from region to region.⁸

The editorial part of the *Journal* is laid out in New York City before being transmitted via telephone lines to computers in Chicopee and South Brunswick. From there, it is sent terrestrially to five regional plants that incorporate advertising. The regional headquarters are based in Orlando, Fla. (Southeast region), Chicopee (East Coast region), Naperville, Ill. (Midwest region), Dallas (Southwest region) and Palo Alto, Calif. (West Coast region).⁹

The final editions are photo-typeset, scanned electronically on flatbed scanning-recording systems, then transmitted via satellite to the 17 printing plants. The *Journal* owns two full transponders on Western Union's Westar V satellite.¹⁰

Each of the *Journal*'s 17 earth stations is duplex. That is, in addition to receiving facsimile signals from the regional centers, the two-way dishes can uplink information to other earth stations in the network. According to Glen Jenkins, national satellite operations manager for Dow Jones & Co., the dishes eventually will be used for telephone communications and video conferencing.¹¹

The total cost of an 11-meter earth station like the *Journal* uses is about \$1 million, including installation. The initial capital expenditure is great, said Dick Cowan, earth station manager for Dow Jones & Co., but a dish generally pays for itself in two years.¹²

The first two stations set up by the *Journal* in 1975 between Chicopee and Orlando cost \$622,000. They paid for themselves in 30 months through savings in transportation and communications costs, according to William Dunn, *Journal* vice president and general manager.¹³ The pattern of savings has repeated itself with every new ground station purchased, Dunn said.¹⁴

The *Journal* will never free itself totally from dependence on telephone lines, Jenkins predicted. Telecommunications systems on the local level are more cost-efficient if telephone lines are used. "It's not in our plans to totally eliminate terrestrial circuits, but to reduce those circuits significantly," he said.¹⁵

THE NEW YORK TIMES

The *New York Times*'s publishing operation for its national edition is similar to the *Journal*'s. After the newspaper is put together in the *Times* building, the pages are placed on cylindrical tubes. A laser device "reads" the newspaper, which is then sent by microwave terrestrially to Carlstadt, N.J. From there, the facsimile signals are beamed to the Westar IV satellite, which retransmits the *Times* to receiving dishes in three locations. The amplified radio signals from the satellite are converted to electrical signals and fed to laser writers, which reproduce the original image onto another cylindrical tube.¹⁶

Although the *Times* leases a portion of a transponder on Westar IV, it does not pay Western Union directly for its use.¹⁷ In a package deal, the American Satellite Corp. (Amsat) leases the *Times* both the space segment and the earth-based hardware for about \$300,000 a year. Amsat constructed and now services uplink earth stations in Carlstadt and the receive-only stations in Chicago, Lakeland, Fla., and Torrence, Calif. The system is used solely for the publication of the national edition and is not capable of transmitting two-way data.¹⁸

The *New York Times* began its national edition in August 1980. It now is printed at the *Torrence Daily Breeze* in Torrence, Calif.; the *South Town Economist* in Chicago; the *Lakeland Ledger*, a *Times*-owned daily newspaper in Lakeland; in Carlstadt; and in the basement of the *Times* building, which is connected to the laser reader via coaxial cable. From the three main printing plants, the *Times* is distributed to most of the major cities in the United States.¹⁹

The circulation of the daily national edition has reached 277,000, while the Sunday national edition has climbed to 540,000.²⁰ The daily circulation figure has grown considerably from 20,500 since the newspaper started in 1980.²¹ The recent addition of the West Coast printing plant in California accounts for much of the increase.

The national edition is a condensed version of the original *New York Times*, which is distributed along the Northeastern corridor. The four sections of the New York City edition are condensed and combined to form two "books" in the national edition. "Book I" includes material from the original edition's sections on foreign and national news, metropol-

itan news and special features. "Book II" is devoted entirely to finance.²²

Most of the advertising in the national edition of the *Times*, unlike *The Wall Street Journal*, is nationally based. The *Times* does run a few ads from department stores, such as Macy's, that have wide-spread reputations, however.

The national daily edition costs 50 cents at the newsstand, while the national Sunday edition sells for \$2.50. Frank Camp, editor of the national edition, said he plans to sell the newspaper as it is, without keying to specific regions because "...no paper in the world can offer the same service as the *Times*."²³

USA TODAY

Unlike most European countries, the United States has never had a truly national daily newspaper. But if Allen Neuharth, chairman and president of the Gannett newspaper chain, has his way, his latest brainchild, *USA Today*, could fill that vacuum. The colorful broadsheet has been billed, "The Nation's Newspaper." Its editors call it the first national daily newspaper of general interest aimed at a wide-spread population.²⁴

If *USA Today* is going to live up to its claim as the nation's first national daily, it will have to become accessible to readers throughout the United States. Since the paper first went to press in September 1982, its circulation has grown by leaps and bounds. The first issues were sold in Washington, D.C., and Baltimore. *USA Today* moved rapidly to Pittsburgh, Atlanta and Minneapolis, and later to Seattle; Portland, Ore.; and San Francisco.

By early October 1982, Gannett was selling 220,000 copies a day—20,000 more than its target. By the end of 1982, it was available in 22 states and more than 100 counties. After seven months, *USA Today* had passed the one million mark and was 40 percent ahead of Gannett's projection for April.²⁵

In late January 1983, circulation had skyrocketed to more than 530,000.²⁶ Gannett had expected to reach 32 states with the satellite-beamed newspaper by the end of 1983.²⁷

The newspaper, published Monday through Friday, first sold in vending machines and on newsstands for a quarter. Gannett is experimenting with home delivery in several upscale markets and is promoting the newspaper through special deals with a fast-food chain, hotel chains and airlines.

The success so far of *USA Today* is the result of the monumental marketing research effort during the paper's planning stage. Media analysts on Wall Street say Gannett did the most thorough research ever performed on behalf of a newspaper in the planning of *USA Today*.²⁸ Every aspect of the newspaper, from the length of stories to the color charts and graphs, was researched meticulously.

A prototype edition of the national paper was published and distributed in 1981 to test the waters. Simmons Market Research Co. and Louis Harris & Assoc., a Gannett firm, conducted surveys in the summer of 1981 in order to gauge public reaction. Prototype issues were distributed to a scientifically selected group of 40,000 potential readers in the nation's eight largest markets and to 4,000 media, business and government leaders.²⁹

The company's final product is tailor-made to reflect the results of Gannett's in-depth marketing surveys.³⁰ The brightly colored paper includes about 40 pages divided into

the sections, **News, Life, Money and Sports**. Stories rarely exceed 10 inches in column length and are seldom jumped from the front page. The first section displays a two-page summary of events in each state. A multi-colored national weather map is printed on the back page.³¹

The succinct articles and brightly colored graphics that characterize *USA Today* could profoundly change the appearance of newspapers, according to pollster Louis Harris.³² *USA Today's* impact already has been felt on several papers, including the *Chicago Tribune*, which recently began printing a sky-blue strip across the banner. Other newspapers have imitated *USA Today's* multi-colored weather maps and charts.³³

In most newspapers, their city of origin is printed directly under the banner. But the ubiquitous *USA Today* prints the words, "Via Satellite," under its logo. The viability of the national paper would have been impossible without satellite technology. In beaming a giant "footprint" simultaneously to several printing locations in the United States, identical issues can be distributed across the country. Through satellite technology, *USA Today* has been able to set a printing deadline as late as 4:15 a.m., leaving plenty of time to publish the late-night baseball scores.³⁴

ADVERTISING NATIONALLY

Nationwide advertisements now are delivered to newspapers across the country by the U.S. Postal Service. Satellite technology eventually will provide a much quicker and more efficient means of delivery.

The concept of sending nationwide advertisements to newspapers via satellite has been under serious consideration within the newspaper community for several years. In 1980, the American Newspaper Publishers Association (ANPA) set up a facsimile committee called Sat-Fax to look into the possibility of establishing a satellite network to distribute display advertising up to a full page in size. Serving on the original committee were 35 people, including staff members of the Newspaper Advertising Bureau (NAB); ANPA publishers; and executives in the fields of marketing, technology and finance.³⁵

Under the Sat-Fax system, an advertising distribution network would be established, using existing AP and UPI earth dishes. (Their customers now use the dishes for reception of wire service copy.) The newspapers' earth stations would receive simultaneous transmissions of wire service material and facsimile ads. The advertising and news signals would be processed by separate demodulators. The wire service signals would go to a front-end system computer, and the Sat-Fax signals would go to a facsimile device capable of printing full-page ads ready for paste-up. The proposed system would include one or more uplink dishes from which national and regional advertisers would transmit ads.³⁶

A facsimile receiver built to the specifications of the Sat-Fax committee already is manufactured by a Japanese firm, Matsushita Graphic Communication Systems, Inc. Japanese publishers use the device to receive copy at remote printing plants and to generate fully paginated pages. There is a two-to-three-year backlog of orders for the receivers, according to ANPA representative Rinehart, and Matsushita is negotiating with U.S. firms interested in buying

one.³⁷

The major obstacle to the implementation of the Sat-Fax project is not technical but economic. The Japanese-built facsimile receiver costs between \$50,000 and \$60,000.³⁸ Sat-Fax estimated the operating cost of a 1,000-receiver system serving most of the United States would be about \$27 million. A preliminary research finding presented to Sat-Fax concluded that newspapers in today's marketplace are not expected to bring in more revenue because of faster and simplified distribution of advertising via satellite. The financial report concluded that individual newspaper will need subsidies from the newspaper industry to pay for the Sat-Fax system.³⁹

Once the Sat-Fax committee gets the green light, it will begin a two-phase test, said Charles M. Kinsolving Jr., NAB vice president of marketing/new technology. The first phase will involve the transmission of ad mechanicals from one uplink station to one receiving dish. In phase two, ads will be transmitted from one uplink station to several destinations.⁴⁰

HOME TRANSMISSION

Facsimile transmission of newspapers to the homes of subscribers has been discussed within the newspaper community since the advent of commercial radio in the 1920s. The ability of publishers to bypass the expensive and time-consuming printing process, whether it be offset or hot-metal, could save publishers great sums of money and perhaps even revitalize the newspaper industry.

The development of satellite technology could make the home printout a commercial reality. A facsimile receiver similar to that under consideration by the Sat-Fax committee could be used in homes for the reception of newspapers. Locally produced newspapers could be transmitted through a relatively inexpensive microwave system to home receivers. The price of receivers (\$50,000 to \$60,000 for the Matsushita model) will have to decline before the operation could become commercially viable, however.

Nationally distributed newspapers such as *USA Today*, *The New York Times* and *The Wall Street Journal*, could be transmitted to the home via satellite. National newspapers could reach millions of homes directly from a central uplink station. In addition to small earth stations, newspaper subscribers would need facsimile receivers similar to the Matsushita model.

Another way readers could receive both local and national newspapers is through another satellite-related technology, videotext, a two-way, interactive technology that reaches viewers through cable television channels or telephone lines. Local newspapers could be distributed to subscribers through coaxial cables laid by cable television firms or through telephone lines. National newspapers could be transmitted from central composing sites to television sets, computer terminals or print-out machines, through cable television systems or telephone long lines.

TRANSMISSION OF WIRE SERVICE COPY

The two major wire services, The Associated Press (AP) and United Press International (UPI), have contemplated the use of satellite technology for the distribution of copy

since the launch of Sputnik I in 1957.⁴¹

They are attracted by the quality of reproduction which satellite use provides. According to Donald J. Brydon of UPI, both audio and print transmissions via satellite are more reliable and garble-free than terrestrial transmission because satellite systems require fewer relay points than land-based systems, and there are fewer opportunities for snafus to develop. AP and UPI broadcasting affiliates report that sound transmissions via satellite are crisper and stronger than transmissions over land. The 15-kilohertz signal received by RKO Radio, for example, is stronger than the microwave signals used by many larger radio networks that transmit to affiliates over land lines.⁴²

Early experiments indicated that transmission of copy via satellite was technically possible but not economically feasible. The combination of advanced technology, which made the ground system less complex and less expensive, and government deregulation later paved the way for satellite systems connecting AP and UPI to their newspaper clients.

AP and UPI demonstrated the transmission of copy from London to Rio de Janeiro to the United States via NASA's experimental Relay satellite at the 1963 American Newspaper Publishers Association Production Management Conference.⁴³ Although the experiment succeeded on a technical level, the hardware was too expensive to implement on a commercial level.

The concept of transmitting copy via satellite was carried further in March 1977 when the wire services set up the experimental Press Satellite system in cooperation with RCA Americom. News and picture signals were sent from AP and UPI headquarters in New York City to Americom's Communication Center in lower Manhattan, N.Y., where they then were beamed to the Satcom satellite. A six-foot receiving dish on the 14th floor of the *New York Daily News* building picked up the signals, feeding them through a coaxial cable to the UPI bureau on the 12th floor. The signals then were demodulated and sent to news and photo receiving equipment at the AP and UPI bureaus. The participants — AP, UPI and RCA — deemed the operation a success.⁴⁴

But satellite communications transmission hasn't been limited to locations within the United States. The news agencies have used satellite technology since the mid-1970s to beam photographic signals from overseas.

Bill Rinehart of the ANPA predicted that before the end of this decade, all wire service pictures will be sent via satellite to AP and UPI subscribers in the form of digital information.⁴⁵

A second advantage of satellite transmission is speed. Most picture transmissions over telephone lines take about eight minutes. A sharply focused photograph can be sent via satellite anywhere in the country within a fraction of a minute.⁴⁶

Beside speed, satellite transmission of pictures is less expensive than transmission through transoceanic cable, and the quality of reproduction is much better. The process of transmitting photographs via satellite is still experimental on the domestic level, however, because the cost is prohibitive.

Experimentation gave way to long-term planning soon after the FCC revoked its mandatory licensing requirement of receive-only earth dishes in 1979.

THE ASSOCIATED PRESS

In February 1980, AP announced plans to install 400 earth stations on the property of newspaper customers before the end of 1980. The ability of earth dishes to receive both audio and print signals encouraged the news agency to plan networks for both radio and newspaper affiliates.⁴⁷

In November 1980, AP had installed dishes in 75 cities.⁴⁸ The news agency usually limits one earth station to a city because the dishes are accessible by several media customers through coaxial cables. By 1981, AP's network had grown to 382 operational earth stations, with several more either partially complete or in the planning stage.⁴⁹

AP's newspaper and radio clients provide property on which to build earth stations, but the wire service retains ownership of the stations. AP buys the receiving dishes and other electronic equipment and pays for installation and maintenance of the dishes. The clients, however, pay only for the news copy they receive through the system. The cost of an AP station varies, depending on the complexity of the electronics, the type of roof mount needed and the wind factor. The price of a station ranges from \$10,000 to \$20,000.⁵⁰

All of AP's hubbing communication bureaus now are equipped with receive-only earth dishes. The hubs are regional information gathering centers that transmit information to AP headquarters in New York for nationwide distribution. According to Eugene Juerling, AP communications manager, the news agency plans to equip the hubs with two-way uplink stations that would transmit as well as receive data via satellite.⁵¹

AP has invited other businesses to participate in its satellite receiving system on a shared-cost basis. After a receiving dish is installed on the property of an AP affiliate, a third party can pay AP for the right to "loop off." In any given city, a cable can be attached to an AP earth station and looped off to the office of a third party, which can filter out any signals it desires but must pay AP for the service.⁵²

The wire services lease only a small fraction of the total transponder space available on the 16⁵³ domestic geostationary satellites now in orbit. AP pays Western Union about \$1 million a month for the use of Westar III and has reserved transponder space on Westar I in case the former malfunctions. The news agency leases 11 channels (10 for audio and one for print) on Transponder IV of Westar III. AP sells extra transponder space to RKO Radio, which leases four audio channels; Wold Communications, which leases and resells three channels; and Dow Jones Audio, which leases one channel.⁵⁴

UNITED PRESS INTERNATIONAL

Like its main rival, UPI has moved ahead rapidly with the installation of earth stations since the FCC deregulated receive-only dishes. In October 1980, UPI announced that 135 of its clients, both newspapers and broadcasters, had ordered dishes.⁵⁵ By November 1981, the network had expanded to 200, and 400 more clients had ordered dishes.⁵⁶ In December 1982, UPI's system included about 550 operational earth stations, and another 100 were near completion.⁵⁷

Until recently, UPI did not purchase earth dishes but encouraged its clients to buy them. The news agency still encourages its clients to buy by offering an incentive. If a cus-

tomers buys an earth station, pays UPI the special "book rate" for news service and gives UPI the right to loop off, the subscriber is given a \$100 credit off the monthly bill. The news agency installs and retains ownership of the electronics used to demodulate the signals, and it absorbs the maintenance costs for the station. In a package deal from Harris Corp., a UPI client can buy a three-meter, receive-only antenna with electronic mount, chasis and power supply for \$5,795.⁵⁸

The celestial link for UPI's growing network is Transponder I on Western Union's Westar III satellite. The wire service leases two channels on the transponder. The 19-DBW channel, which uses a 20-kilohertz multiplex signal, costs about \$11,000 a month. The 22-DBW, 230-kilobit channel provides time-division multiplexing (a digital technique) for about \$22,000 a month.⁵⁹ UPI's conversion to satellite is an effort to turn around a company that has lost money every year since the early 1960s.⁶⁰ Four entrepreneurs bought the news agency from the E.W. Scripps Co. in June 1982 with the idea of turning it into a profitable enterprise. UPI lost \$20.3 million before taxes in the past two years, but is beginning to show signs of life again because of the satellite connection.⁶¹ As more and more of UPI's approximately 4,600 newspaper and broadcasting clients set up dishes, the firm's financial prognosis continues to improve.

INDEPENDENCE FROM MA BELL

The ability of AP and UPI to save money by switching their data transmission systems from AT&T facilities to satellite is the major reason for the recent growth of earth stations networks. In 1977, both news agencies were faced with the largest AT&T rate hike in history. A 45 percent increase raised the combined annual bill of AP and UPI for that year to \$17.2 million—an increase from the preceding year of \$4.3 million.⁶²

Because the wire services always have relied heavily on AT&T, the idea of gaining independence in telecommunications by moving to satellite was, of course, an attractive alternative. At the annual ANPA/RI Production Management Conference in June 1977, James F. Darr, UPI vice president of systems development, said, "Using our satellite and your earth stations, we can discontinue thousands of miles of leased circuits and cut our telephone company bill by \$12 million a year."⁶³

Speaking at the same meeting, David L. Bowen, AP vice president and director of communications, said:

I can guarantee that AP and UPI will continue their vigorous competition. We would share this communications system but this is really no different than the current situation in which we share AT&T's system.⁶⁴

In October 1980, after the wire services had begun to set up earth stations, Darr estimated that UPI's annual \$11.2 million AT&T bill could be reduced by at least \$8 million after the network is complete. Bowen projected savings of \$1.8 million for AP in 1981 and \$2 million in 1982 as the planned 900-station system grew.⁶⁵

UPI already saves about \$2.4 million annually, according to DePrez. He said UPI expects to cut its AT&T bill between

75 and 80 percent after the earth station network is complete. By eliminating the need to construct land lines in many areas, the wire services will save money in the future. The true effect of satellite technology is greater than the immediate reduction in the AT&T bill, DePrez said.⁶⁶

Even after the news agencies have completed their satellite networks, they will remain dependent on Ma Bell for local data transmissions and long-distance telephone calls. Most of the earth dishes now used by AP and UPI are receive-only, which means they cannot be used for two-way communications. The wire services will continue to mail monthly checks to AT&T, but their bills may continue to shrink as more earth stations are set up.⁶⁷

The clients of AP and UPI, as well as the news agencies themselves, should save money once the satellite networks are in place. In the past, AP and UPI have passed the AT&T rate increase to their customers. In the near future, DePrez said, the subscribers will not get rate increases, and "...instead of spending all the money with AT&T, we can spend it on reporters and new products."⁶⁸

OTHER USES OF SATELLITE TECHNOLOGY

The news gathering process involves a variety of telecommunications activities, and the stories that appear in a newspaper are the end products of those activities. Many articles are based on telephone interviews between a reporter and his sources. Other stories are researched in data banks, which are accessed through telecommunications systems.⁶⁹ Discussions between reporters in the field and editors in the news room about developing stories take place over the telephone.

Most news gathering activities are conducted over telephone land lines if they take place in the continental United States. However, an increasing percentage (about 66 percent, according to Intelsat⁷⁰) of transoceanic communications are transmitted via satellite. The major advantage of using satellites instead of land lines for gathering news is low cost. The quality of transmission improves with satellite technology, but the speed of transmission is about the same—a split second—for celestial and terrestrial systems.

Satellites have not yet profoundly improved the news gathering process, according to Don Till, vice president/telecommunications for *The Washington Post*. He explained:

The news gathering process is a fairly low-volume application. If you have a correspondent in the field, he may write one story a day. If it is short, his story may be 500 to 600 words. If it is long, it may be 5,000 to 10,000 words. But even by those standards, the volume is low enough to be handled conveniently by old-fashioned terrestrial circuits.⁷¹

The most significant advantages of using satellites for news gathering will be realized if technology continues to make satellite communications more portable and less expensive. The combination of finely focused satellite beams and mobile receiving units could make it possible for reporters to transmit information from remote regions to their home bases quickly and efficiently.

In the future, foreign correspondents may carry satellite receiving dishes on their backs. A reporter covering the war in Afghanistan, for example, could relay the casualty figures of a recent battle to his newspaper in the United States with an immediacy not possible using terrestrial technology.

In a similar situation today, a reporter could lose hours or even days traveling to the nearest city equipped with overseas transmission facilities.

Another future use for satellite technology may be with internal communications. Any large business, whether it be a newspaper, chemical firm or hamburger chain, needs an efficient telecommunications system in order to operate smoothly. Executives must be able to communicate with one another whether they are in the same building or on opposite sides of the globe.

Newspapers historically have depended on AT&T land lines for internal communications. As discussed earlier, the newspaper industry is trying to gain some independence from AT&T. Through its network of two-way earth stations, *The Wall Street Journal* eventually will provide its own telephone system for internal communications, but it still will rely on the telephone companies for local service. Dow Jones & Co.'s two-way dishes can be used for transmission of voice signals as well as facsimile and other computerized data.⁷² AP is planning to equip its hubbing communication bureaus with two-way dishes that will transmit as well as receive data.⁷³ UPI is considering the installation of duplex earth stations in the future.⁷⁴

The expanding earth station networks set up by the wire services and nationally distributed newspapers eventually may be used for a growing new technology called electronic mail. Instead of waiting for days to communicate by mail, executives can send and receive messages instantly on a television set or computer terminal. As part of the videotext explosion, electronic mail can be sent either through telephone lines or cable television systems.⁷⁵

Instead of traveling on expensive and time-consuming business trips, newspaper executives and reporters eventually may hold meetings on large video screens. An increasing number of meetings, especially in the field of medicine, now are conducted through videoconferencing. Participants gather in hotels or other buildings equipped with satellite uplink stations, where they carry on discussions with colleagues at other locations.⁷⁶

Videoconferencing is an outgrowth of the picturephone developed by AT&T two decades ago. The picturephone failed because the thick cables it required were too expensive. Commercial videoconferencing was made possible by the development of modern communications satellites, which provide wider bandwidth and lower costs than cable.⁷⁷

As more and more companies and organizations have turned to videoconferencing in an effort to save time and money, it has become a lucrative business, grossing about \$30 million a year. Market analysts expect the new industry to continue its rapid expansion throughout the 1980s.

Most of the major videoconferencing operations are run by hotel chains that set up earth dishes for reception of pay television programming. The leaders in videoconferencing are the Hilton Communications Network, a joint venture between Hilton Hotels and the Robert Wold Co.; Hi Net, the Holiday Inn video network; Pioneer, a joint venture of Intercontinental Hotels and Comsat General; and the Public Broadcasting Service.⁷⁸

Despite its ability to convey large amounts of data, its high-quality transmissions and relatively low cost, satellite technology does have some disadvantages. The major drawback of satellite use is that microwave transmissions and buildings between the earth stations and satellite interfere with reception. Part of the licensing procedure dropped by the FCC in 1979 involved frequency coordination of microwave and satellite signals to eliminate the possibility of in-

terference. Prospective earth station owners can now install antennas without the complications and red tape involved with federal regulation, but no longer are they ensured of clear reception.⁷⁹

Too, satellite technology already has ruffled a few feathers within the newspaper community. A family of starlings disrupted transmission of AP news reports to the New Brunswick (N.J.) Home News after they made the newspa-

per's satellite dish their home. The Home News decided to put up with the garbled transmissions until the young starlings had grown big enough to leave the nest.⁸⁰

"We would hate to have a crisis erupt in the Middle East or somewhere else and not have a word about it in tomorrow's paper," Home News Executive Editor Watson Sims said, "but we will try and keep up with the world and let the bird keep its nest."⁸¹

FOOTNOTES

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